



Review of Additional Retirement Service Credit Purchases

Introduction & Background

During the 2003-2004 legislative session, Assembly Bill 719 (Negrete McLeod) was introduced and later became Chapter 838. As a result, Government Code Section 20909 was added which allows members of CalPERS to purchase up to five years of non-qualified service, sometimes referred to as "airtime" or Additional Retirement Service Credit (ARSC).

CalPERS implemented its ARSC program in 2004. The program is available to any active CalPERS member who has at least five years of earned service credit. A member can purchase up to five years of ARSC in full-year increments. Only one service credit purchase may be made, even if the member chose to purchase less than the maximum of five years.

As indicated in Section 20909, members electing to purchase ARSC are required to contribute an amount equivalent to the increase in employer liability as specified in Section 21052. That means that the cost to purchase ARSC is calculated using a "present value" method, which is based on the member's age at the time of purchase and the highest monthly full-time rate and an average of any special compensation reported to CalPERS by the employer during the last 36 months. This provides the best estimate of the potential future final compensation figure that may be used at retirement for calculating the member's retirement benefit. The member's additional retirement benefit increase received from this ARSC purchase would then be projected to retirement, disability, death, or other termination from employment. Finally, the lump sum cost in today's dollars is calculated.

This calculation involves the use of actuarial assumption, including projected age at retirement, life expectancy and future salary increases. These probabilities are the same assumptions used in the annual actuarial valuations that ensure all member benefits are adequately funded.

Purpose

The purpose of the review was to identify whether the assumptions used to calculate the cost of ARSC purchases should be changed. When the option to buy ARSC became available to members, the Actuarial Office had no specific experience on which to derive assumptions. The assumptions used for ARSC purchases were set to be the same as those used in performing our annual actuarial valuations and for funding the plans at CalPERS. Staff has now collected and reviewed experience data for the period between June 30, 1997 and June 30, 2007.

Members electing to purchase ARSC are required to contribute an amount equivalent to the increase in employer liability as specified in Section 21052. This means that the employee pays both the employee and employer share of costs.

This method is referred to as the “present value” method. Other types of service credit purchase fall under that category like military service credit purchases. Because of the very small number of members purchasing other types of service under the “present value” method, it was not possible to study them separately. However, staff believes the results of this study are applicable to all service credit purchases under the “present value” method.

As part of this review, the focus was placed on comparing the experience of members who purchased ARSC to those members who did not purchase ARSC. The two main assumptions that were reviewed were (1) the future salary increases assumed in the calculation of ARSC purchases and (2) the timing of the service retirement. Staff believes that these two assumptions have the biggest impact on the cost of ARSC purchases since members can choose the time most favorable to purchase ARSC.

Data

Collecting data for this study was an issue since this program is fairly new and data is somewhat limited. ARSC purchases were first processed in the spring of 2004. The CalPERS Actuarial Office conducted this study simultaneously with the experience study. That study was completed and presented to the CalPERS Board in April 2010 and utilized data from between June 30, 1997 and June 30, 2007.

For this review of ARSC purchases, the period of data studied was from between June 30, 2004 and June 30, 2007. Over 33,000 members purchased ARSC during that period. The data consisted of a series of annual snapshots (as of June 30th 2005, 2006 and 2007) of the membership of the participants in all of the retirement plans included in the Public Employees' Retirement Fund.

Results and Analysis

The two assumptions reviewed were the service retirement pattern assumptions and salary increases assumptions.

Service Retirement Pattern

In order to review the service retirement pattern, staff analyzed the data by looking at factors such as age, service, retirement formula and membership category (e.g. miscellaneous, fire, police etc.) for members who purchased ARSC and those that did not. For the service retirement pattern, we only looked at members who were eligible to retire at any time during our study period.

Staff found that members that purchased ARSC retired at a much faster rate than those that did not purchase ARSC. This was true irrespective of age, service, benefit formula or membership category. For example, for all State Miscellaneous Tier 1 members that purchased ARSC and were eligible to retire during the study period, about 14% of those members elected to retire. By comparison, only 7% of the State Miscellaneous Tier 1 members that did not purchase ARSC who were eligible to retire during the study period elected retirement. Put another way, during the period reviewed, State Miscellaneous Tier 1 members that purchased ARSC retired at twice the rate as those that did not buy ARSC. Note that this does not mean the cost should be twice.

The following table compares the percentage of members that elected to retire during the study period for both those that purchased ARSC and those that did not for the various plans at CalPERS.

Average Annual Retirement Rate Fiscal Years 2004-2005 to 2006-2007

Category	Average Annual Retirement Rate	
	Members who purchased ARSC	Members who did not purchase ARSC
State Miscellaneous Tier 1	14.5%	7.0%
State Industrial	15.2%	7.0%
State Safety	12.5%	6.6%
State POFF	18.7%	11.5%
State CHP	26.5%	18.7%
Schools	14.7%	5.9%
Public Agency Miscellaneous	14.0%	7.0%
Public Agency Safety	20.5%	13.5%

Another way of looking at the impact of purchasing ARSC on the service retirement pattern is to look at the average retirement age. The table below compares by category the average retirement age of members that elected to retire during the study period for both those that purchased ARSC and those that did not.

**Average Retirement Age
Fiscal Years 2004-2005 to 2006-2007**

Category	Average Retirement Age	
	Members who purchased ARSC	Members who did not purchase ARSC
State Miscellaneous Tier 1	58.7	59.7
State Industrial	59.1	59.5
State Safety	58.9	59.8
State POFF	54.5	55.8
State CHP	52.8	54.5
Schools	59.4	60.6
Public Agency Miscellaneous	57.8	59.1
Public Agency Safety	53.0	54.5

The results for public agency safety members were aggregated among all categories (police officers, county peace officers and firefighters) because it was determined that most of the public safety categories represented too small a sample to be considered credible. However, State, Schools and public agency miscellaneous were of adequate size to consider separately.

Salary Increases

In order to review the salary increase assumption, staff analyzed the data by looking at the salary increases received by members that purchased ARSC and those that did not. In staff's opinion this is the best approach to evaluate whether the same salary increase assumptions used in the actuarial valuations should be used in the calculation of the cost of ARSC purchases. Trying to compare actual salary increases of members that purchased ARSC to the assumptions used to determine the cost of ARSC is especially inappropriate due to the fact that the study period is very short.

For members that purchased ARSC, staff only looked at the salary increases in the fiscal year following the actual purchase date. This was done in an attempt to determine whether members were timing their election to purchase their service just prior to a known increase in salary.

Staff found was that members who purchased ARSC did not receive higher salary increases following their purchase than members who did not purchase ARSC. In fact, for most groups the salary increases of members who did not purchase ARSC was higher than those who made a purchase. Below is a table comparing the average annual salary increase for members that purchased ARSC and those who did not.

Average Annual Salary Increase Fiscal Years 2004-2005 to 2006-2007

Category	Average Annual Salary Increase	
	Members who purchased ARSC	Members who did not purchased ARSC
State Miscellaneous Tier 1	5.5%	5.4%
State Industrial	5.6%	5.8%
State Safety	8.3%	7.2%
State POFF	11.2%	12.8%
State CHP	8.8%	8.8%
Schools	6.0%	6.6%
Public Agency Miscellaneous	6.4%	7.1%
Public Agency Safety	7.1%	8.0%

Changes to Existing Assumptions

As mentioned above, in April 2010 the CalPERS Board approved the use of new actuarial assumptions for actuarial valuations based on a recently completed experience study conducted by the Actuarial Office. This study focused on recent patterns of termination, death, disability, retirement and salary increases based on CalPERS data from 1997 to 2007. As a result of these new assumptions, staff believes that the cost factors for service credit purchases will require an update.

Conclusion and Proposed Changes

Staff found that there were no material differences between the salary increases received by members who purchased ARSC following their purchase compared to members who did not purchase ARSC. As a result, we propose using the same assumptions for salary increases when calculating the cost of ARSC purchase as those used in the annual actuarial valuation and as previously adopted by the Board in April 2010.

For service retirement, the study provided strong evidence that the retirement pattern of those purchasing service was different than those who did not

purchase service. As a result, staff proposes using different retirement pattern assumptions for all service credit purchases under the “present value” method. Staff recommends that the service retirement pattern assumptions used in calculating ARSC purchase cost be twice of those used in the annual actuarial valuation (and twice those previously adopted by the Board in April 2010).

In addition, staff proposes improving the method used to calculate the cost of service credit purchase under the “present value” method by modifying how we handle the probability that some may never receive a service retirement benefit and instead become disabled, die, or terminate their CalPERS membership.

Changes to the actuarial assumptions and method for the calculation of ARSC purchases will increase the cost of ARSC purchase. The actual increases in cost will depend on the plan and the member’s age at the time of purchase.

The following table shows the estimated average increase in the cost to purchase service under the present value method broken down by plan. These averages are based on the average age at purchase for the last few years. The actual increases may be bigger or smaller than shown in the following table depending on the age at purchase.

Average Increase in the Cost of Purchasing ARSC

PLAN	Average Increase
Public Agency Miscellaneous	17%
Public Agency Safety	24%
State Miscellaneous	18%
State Industrial	12%
State Safety	23%
POFF	23%
CHP	16%
Schools	38%

As can be seen above, staff expects the average State Miscellaneous member to have to pay 18% more to purchase service under the “present value” method if the change in assumptions and method described here is approved. Appendix A contains a cost comparison by age for all plans in both percentages and dollars at a specific salary level.

Appendix A

Average Increase in the Cost of Purchasing ARSC - comparison by age in both percentages and dollars -

Public Agency Miscellaneous plan*

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members who have purchased ARSC
less than 30	31% - 45%	\$16,000 - \$19,000	\$22,000 - \$27,000	0.4%
30-39	19% - 36%	\$20,000 - \$31,000	\$28,000 - \$37,000	7.3%
40-49	12% - 18%	\$32,000 - \$45,000	\$38,000 - \$50,000	26.6%
50-59	12% - 18%	\$46,000 - \$55,000	\$52,000 - \$65,000	50.5%
60-69	18% - 27%	\$46,000 - \$56,000	\$57,000 - \$67,000	14.8%
70+	7% - 22%	\$30,000 - \$47,000	\$32,000 - \$55,000	0.4%

* is represented by public agency miscellaneous plan 2% @55.

Public Agency Safety plan**

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members who have purchased ARSC
less than 30	25% - 37%	\$38,000 - \$38,000	\$47,000 - \$52,000	0.5%
30-39	28% - 41%	\$38,000 - \$54,000	\$53,000 - \$69,000	16.8%
40-49	24% - 27%	\$56,000 - \$74,000	\$71,000 - \$92,000	42.4%
50-59	10% - 25%	\$76,000 - \$83,000	\$91,000 - \$96,000	38.9%
60-69	6% - 23%	\$67,000 - \$86,000	\$82,000 - \$91,000	1.3%
70+	24% - 38%	\$32,000 - \$65,000	\$44,000 - \$80,000	0.0%

** is represented by public agency safety plan 3% @50.

State Miscellaneous plan

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members Who Have Purchased ARSC
less than 30	33% - 50%	\$13,000 - \$19,000	\$20,000 - \$25,000	0.5%
30-39	18% - 32%	\$20,000 - \$30,000	\$26,000 - \$35,000	7.7%
40-49	13% - 17%	\$31,000 - \$44,000	\$36,000 - \$49,000	20.5%
50-59	12% - 20%	\$45,000 - \$55,000	\$51,000 - \$66,000	52.3%
60-69	21% - 30%	\$46,000 - \$56,000	\$58,000 - \$69,000	18.3%
70+	5% - 23%	\$31,000 - \$49,000	\$33,000 - \$56,000	0.8%

State Industrial plan

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members Who Have Purchased ARSC
less than 30	17% - 28%	\$18,000 - \$25,000	\$23,000 - \$29,000	0.3%
30-39	9% - 16%	\$25,000 - \$35,000	\$29,000 - \$38,000	6.6%
40-49	7% - 9%	\$36,000 - \$48,000	\$39,000 - \$52,000	21.3%
50-59	7% - 15%	\$50,000 - \$59,000	\$54,000 - \$68,000	54.2%
60-69	17% - 26%	\$50,000 - \$59,000	\$61,000 - \$71,000	16.4%
70+	3% - 23%	\$33,000 - \$51,000	\$33,000 - \$61,000	1.2%

State Safety plan

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members Who Have Purchased ARSC
less than 30	19% - 21%	\$19,000 - \$26,000	\$23,000 - \$31,000	0.0%
30-39	19% - 20%	\$27,000 - \$36,000	\$32,000 - \$43,000	2.6%
40-49	20% - 23%	\$37,000 - \$49,000	\$44,000 - \$61,000	14.6%
50-59	21% - 27%	\$51,000 - \$60,000	\$63,000 - \$74,000	57.0%
60-69	21% - 24%	\$52,000 - \$60,000	\$63,000 - \$72,000	24.0%
70+	5% - 18%	\$35,000 - \$53,000	\$37,000 - \$60,000	1.9%

State POFF plan

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members Who Have Purchased ARSC
less than 30	29% - 31%	\$32,000 - \$36,000	\$42,000 - \$46,000	0.5%
30-39	22% - 28%	\$37,000 - \$51,000	\$48,000 - \$62,000	11.5%
40-49	22% - 24%	\$53,000 - \$69,000	\$64,000 - \$86,000	40.0%
50-59	20% - 24%	\$71,000 - \$75,000	\$88,000 - \$92,000	43.4%
60-69	9% - 20%	\$71,000 - \$73,000	\$79,000 - \$87,000	4.4%
70+	7% - 9%	\$41,000 - \$75,000	\$44,000 - \$80,000	0.1%

State CHP plan

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members Who Have Purchased ARSC
less than 30	25% - 25%	\$28,000 - \$32,000	\$35,000 - \$40,000	0.7%
30-39	18% - 24%	\$33,000 - \$47,000	\$41,000 - \$55,000	16.5%
40-49	15% - 18%	\$48,000 - \$67,000	\$57,000 - \$77,000	47.9%
50-59	6% - 15%	\$69,000 - \$91,000	\$80,000 - \$96,000	34.6%
60-69	5% - 7%	\$77,000 - \$94,000	\$82,000 - \$99,000	0.4%
70+	7% - 9%	\$41,000 - \$75,000	\$44,000 - \$80,000	0.0%

Schools plan

Age at purchase	Increase in Percentage	Current Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	New Cost for 5 yrs of ARSC Purchase if member's salary is \$50K	Distribution of Members Who Have Purchased ARSC
less than 30	57% - 67%	\$13,000 - \$15,000	\$20,000 - \$26,000	0.4%
30-39	50% - 66%	\$16,000 - \$24,000	\$26,000 - \$36,000	4.9%
40-49	33% - 48%	\$25,000 - \$39,000	\$37,000 - \$51,000	14.9%
50-59	31% - 36%	\$40,000 - \$52,000	\$53,000 - \$70,000	52.7%
60-69	36% - 52%	\$41,000 - \$53,000	\$62,000 - \$73,000	25.9%
70+	12% - 47%	\$32,000 - \$41,000	\$36,000 - \$59,000	1.3%